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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/568,967  | 03/14/2006  | Hideo Taka           | 06096/HG            | 8880             |
| 1933 7590 09/24/2008<br>FRISHAUF, HOLTZ, GOODMAN & CHICK, PC<br>220 Fifth Avenue<br>16TH Floor<br>NEW YORK, NY 10001-7708 |             |                      |                     |                  |
| EXAMINER<br>WILSON, MICHAEL H   |             |                      |                     |                  |
| ART UNIT  |             | PAPER NUMBER         |                     |                  |
| 1794  |             |                      |                     |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/568,967

**Applicant(s)**

TAKA ET AL.

**Examiner**

MICHAEL WILSON

**Art Unit**

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE/US)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The listing of references in the Search Report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate paper." Therefore, the references cited in the Search Report have not been considered. Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 10-13, and 23-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Takimoto et al. (US 5,331,182 A).

Regarding claim 1, Takimoto et al. discloses an organic electroluminescent element comprising a cathode and an anode (column 2, lines 16-20) with at least one organic compound layer between the electrodes comprising a polymer of instant formula (1) (column 2, lines 53-60) wherein n is not less than 2 (column 2, line 59).

Regarding claim 2, Takimoto et al. disclose all the claim limitations as set forth above. Additionally the reference discloses wherein Ar1 has no more than 5 rings (compounds A1 to A5, column 8, lines 45-65).

Regarding claim 10, Takimoto et al. discloses all the claim limitations as set forth above. Additionally the reference discloses wherein the organic electroluminescent element comprising a cathode and an anode (column 2, lines 16-20) with at least one organic compound layer between the electrodes comprising two or more polymers (column 12, lines 13-19) of instant formula (1) (column 2, lines 53-60) wherein n is not less than 2 (column 2, line 59).

Regarding claims 11-13 and 23-25, Takimoto et al. discloses all the claim limitations as set forth above. Additionally the reference discloses wherein the organic electroluminescent element emits blue, green, and red light, which produces white light (column 12, lines 13-19). The reference also discloses a display unit (column 12, line 14) and illuminator (column 11, lines 48-57) equipped with an organic electroluminescent device.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
6. Claims 3-7, 9, 15-17, and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takimoto et al. (US 5,331,182 A) in view of Tokito et al. (US 2003/0091862 A1).

Regarding claims 3-7 and 9, Takimoto et al. discloses an organic electroluminescent element comprising a cathode and an anode (column 2, lines 16-20) with at least one organic compound layer between the electrodes comprising a polymer (column 2, lines 53-60) with arylene units  $Ar_2$  (column 8, lines 45-65) and  $L_2$  units O, S, Se, or Te (column 2, line 59), and wherein n is not less than 2 (column 2, line 59). Additionally the reference discloses wherein  $Ar_1$  has no more than 5 rings (compounds A1 to A5, column 8, lines 45-65). However the reference does not explicitly disclose the polymer containing pendent chains attached to  $Ar_2$ .

Tokito et al. teach a similar organic polymer electroluminescent device (abstract). The reference teaches attaching pendent chains of hole transporting compounds [0090], such as carbazole ([0090] HT-1) and phenylcarbazole ([0095], first side chain in polymer P3), and phosphorescent complexes [0106] to the polymer backbone. The phosphorescent organometallic complexes are taught to have partial structures of instant formulae (5) and (7) ([0087], formulae R-1 and R-3). The reference teaches doing so allows for very highly efficient phosphorescence [0013].

It would be obvious to one of ordinary skill in the art at the time of the invention to combine the hole transporting compounds and phosphorescent complexes pendent chains as taught by Tokito et al. with the polymer of Takimoto et al. One of ordinary skill in the art would reasonably expect such a combination to be suitable given both references disclose light-emitting polymers designed for use in similar electroluminescent devices. One of ordinary skill in the art would be motivated by a desire to have very highly efficient phosphorescence.

Regarding claims 15-17, and 19-21, modified Takimoto et al. discloses all the claim limitations as set forth above. Additionally the reference discloses wherein the organic electroluminescent element emits blue, green, and red light, which produces white light (column 12, lines 13-19). The reference also discloses a display unit (column 12, line 14) and illuminator (column 11, lines 48-57) equipped with an organic electroluminescent device.

7. Claims 3,4, 6, 7, 9, 15-17, and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takimoto et al. (US 5,331,182 A) in view of Ikehira et al. (US 2002/0193532 A1).

Regarding claims 3, 4, 6, 7, and 9, Takimoto et al. discloses an organic electroluminescent element comprising a cathode and an anode (column 2, lines 16-20) with at least one organic compound layer between the electrodes comprising a polymer (column 2, lines 53-60) with arylene units  $Ar_2$  (column 8, lines 45-65) and  $L_2$  units O, S, Se, or Te (column 2, line 59), and wherein n is not less than 2 (column 2, line 59). Additionally the reference discloses wherein  $Ar_1$  has no more than 5 rings (compounds A1 to A5, column 8, lines 45-65). However the reference does not explicitly disclose the polymer containing pendent chains attached to  $Ar_2$ .

Ikehira et al. teach a similar organic polymer electroluminescent device (abstract). The reference teaches attaching pendent chains of phosphorescent complexes to the polymer backbone [0044]. The phosphorescent organometallic complexes are taught to have partial structures of instant formulae (5) and (7) [0044].

The reference teaches that using the phosphorescent complexes can result in high light emitting efficiency [0284].

It would be obvious to one of ordinary skill in the art at the time of the invention to combine the phosphorescent complexes as taught by Ikehira et al. with the polymer of Takimoto et al. One of ordinary skill in the art would reasonably expect such a combination to be suitable given both references disclose light-emitting polymers designed for use in similar electroluminescent devices. One of ordinary skill in the art would be motivated by a desire to have high light emitting efficiency.

Regarding claims 15-17, and 19-21, modified Takimoto et al. discloses all the claim limitations as set forth above. Additionally the reference discloses wherein the organic electroluminescent element emits blue, green, and red light, which produces white light (column 12, lines 13-19). The reference also discloses a display unit (column 12, line 14) and illuminator (column 11, lines 48-57) equipped with an organic electroluminescent device.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takimoto et al. (US 5,331,182 A) in view of Tokito et al. (US 2003/0091862 A1) as applied to claim 3 above, and further in view of Spreitzer et al. (Soluble phenyl-substituted PPVs-new materials for highly efficient polymer LEDs.).

Regarding claim 8, modified Takimoto et al. disclose all the claim limitations as set forth above. Additionally the reference discloses that Ar<sub>2</sub> may be substituted (column 7, line 67). The Tokito et al. teach attaching pendent chains of hole



transporting compounds [0090], such as carbazole or phenylcarbazole ([0095], first side chain in polymer P3). However the reference does not explicitly disclose wherein Ar<sub>2</sub> is substituted by an additional phenyl group.

Spreitzer et al. teach a similar polymer designed for light-emitting devices (paragraph 1, page 1340) the reference teaches binding an alkoxy substituted phenyl to the polymer improves solubility and mechanical stability (paragraph 3, lines 5-10).

It would be obvious to one of ordinary skill in the art at the time of the invention to combine the alkoxy substituted phenyl substituent with the polymer of modified Takimoto et al. One of ordinary skill in the art would reasonably expect such a combination to be suitable given that Spreitzer et al. teach the substituent for polymers used in electroluminescent devices. One of ordinary skill in the art would be motivated by a desire to improve solubility and mechanical stability of the polymer.

Additionally it would be obvious to one of ordinary skill in the art at the time of the invention to place the substituent of Spreitzer et al. in the Ar position shown in instant formula (22). One of ordinary skill in the art would be directed to use the position meta (the position of Ar) or para to the hole transporting group by steric considerations. One of ordinary skill in the art would further be guided in the selection between the two possible positions (meta or para) by the specific effects the position would have on the physical properties of the polymer.

9. Claims 14 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takimoto et al. (US 5,331,182 A) as applied to claims 1 and 25 above and in view of Lee (US 2002/0079835 A1).

Regarding claims 14 and 26, Takimoto et al. disclose all the claim limitations as set forth above. Additionally the reference also discloses a display unit (column 12, line 14) and illuminator (column 11, lines 48-57) equipped with an organic electroluminescent device. However the reference does not explicitly disclose a display equipped with a liquid crystal cell as a display means.

Lee teaches a similar electroluminescent device (abstract). The reference teaches an electroluminescent device may be used as a backlight for a liquid crystal display (LCD) panel.

It would be obvious to one of ordinary skill in the art at the time of the invention to combine the LCD panel with the device of Takimoto et al as taught by Lee. One of ordinary skill in the art would be motivated by a desire to utilize the device of modified Takimoto et al.

10. Claims 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takimoto et al. (US 5,331,182 A) in view of Tokito et al. (US 2003/0091862 A1) as applied to claims 3 and 21 above, and further in view of Lee (US 2002/0079835 A1).

Regarding claims 18 and 21, modified Takimoto et al. disclose all the claim limitations as set forth above. Additionally the reference also discloses a display unit (column 12, line 14) and illuminator (column 11, lines 48-57) equipped with an organic

electroluminescent device. However the reference does not explicitly disclose a display equipped with a liquid crystal cell as a display means.

Lee teaches a similar electroluminescent device (abstract). The reference teaches an electroluminescent device may be used as a backlight for a liquid crystal display (LCD) panel.

It would be obvious to one of ordinary skill in the art at the time of the invention to combine the LCD panel with the device of modified Takimoto et al as taught by Lee. One of ordinary skill in the art would be motivated by a desire to utilize the device of modified Takimoto et al.

11. Claims 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takimoto et al. (US 5,331,182 A) in view of Ikehira et al. (US 2002/0193532 A1) as applied to claims 3 and 21 above, and further in view of Lee (US 2002/0079835 A1).

Regarding claims 18 and 21, modified Takimoto et al. disclose all the claim limitations as set forth above. Additionally the reference also discloses a display unit (column 12, line 14) and illuminator (column 11, lines 48-57) equipped with an organic electroluminescent device. However the reference does not explicitly disclose a display equipped with a liquid crystal cell as a display means.

Lee teaches a similar electroluminescent device (abstract). The reference teaches an electroluminescent device may be used as a backlight for a liquid crystal display (LCD) panel.

It would be obvious to one of ordinary skill in the art at the time of the invention to combine the LCD panel with the device of modified Takimoto et al as taught by Lee. One of ordinary skill in the art would be motivated by a desire to utilize the device of modified Takimoto et al.

### ***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL WILSON whose telephone number is (571) 270-3882. The examiner can normally be reached on Monday-Thursday, 7:30-5:00PM EST, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on (571) 272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MHW

/Callie E. Shosho/  
Supervisory Patent Examiner, Art Unit 1794